

1       1. ~~A data storage system wherein end-user data is~~  
2 transferred between a host computer and a bank of disk  
3 drives through an interface, such interface, comprising:  
4               a memory;  
5               a plurality of directors, at least one front-  
6 end one of the directors being in communication with the  
7 host computer and at least one rear-end one of the directors  
8 being in communication with the bank of disk drives;  
9               an interface state data bus section, for  
10 carrying interface state data, such interface state data bus  
11 section in communication with: both the at least one front-  
12 end one and the at least one rear-end one of the directors;  
13 and to the memory;  
14               a plurality of end-user data busses, for  
15 carrying end-user data, each one of the plurality of end-  
16 user data busses having a first end coupled to a  
17 corresponding one of the plurality of directors and a second  
18 end coupled to the memory; and  
19               wherein such plurality of directors control the end-  
20 user data transfer between the host computer and the bank of  
21 disk drives through the memory via the end-user data busses  
22 in response to interface state data generated by the  
23 directors, such generated interface state data being  
24 transferred among the directors through the memory via the  
25 interface state bus.

1       2. The system recited in claim 1 wherein the end-  
2 users data busses are serial busses.

1       3. The system recited in claim 1 wherein the  
2 interface state data bus section includes parallel busses.

1           4. The system recited in claim 3 wherein the  
2 parallel busses are coupled to the directors in a multi-drop  
3 configuration.

1           5. The system recited in claim 3 wherein the end-  
2 user data busses are serial busses.

1           6. The system recited in claim 5 wherein the  
2 parallel busses are coupled to the directors in a multi-drop  
3 configuration.

1           7. The system recited in claim 1 including a  
2 coupling node and wherein each the memory has a plurality of  
3 regions and wherein the each one of the end-user data busses  
4 is coupled to the plurality of regions selectively through  
5 coupling node.

1           8. The system recited in claim 7 wherein the  
2 coupling node includes a cross-bar switch.

1           9. The system recited in claim 3 wherein the  
2 interface state data bus section includes a plurality of  
3 parallel busses, each one thereof being coupled to a one of  
4 the plurality of directors and to the memory.

1           10. A method of operating a data storage system  
2 wherein end-user data is transferred between a host computer  
3 and a bank of disk drives through an interface, such method  
4 comprising:

5            providing a memory;  
6            providing a plurality of directors, at least  
7            one front-end one of the directors being in communication  
8            with the host computer and at least one rear-end one of the

9       directors being in communication with the bank of disk  
10      drives;  
11               providing a plurality of interface state data  
12      busses for carrying interface state data, interface state  
13      data busses being in communication with: both the at least  
14      one front-end one and the at least one rear-end one of the  
15      directors; and to the memory;  
16               providing a plurality of end-user data busses,  
17      for carrying end-user data, each one of the plurality of  
18      end-user data busses having a first end coupled to a  
19      corresponding one of the plurality of directors and a second  
20      end coupled to the memory; and  
21               wherein such plurality of directors control the end-  
22      user data transfer between the host computer and the bank of  
23      disk drives through the memory via the end-user data busses  
24      in response to interface state data generated by the  
25      directors, such generated interface state data being  
26      transferred among the directors through the memory via the  
27      interface state bus.

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